On the reverse link, common code channels shared by adjacent cells can be defined to accommodate soft handoff. This way, the base station does not require explicit knowledge of the handoff status of mobiles in order to demodulate them.

The switch has knowledge of the soft handoff status of all mobiles in the network. When messages addressed to a specific mobile arrive at the switch, they are forwarded to the appropriate base stations for transmission. Messages received at the base station from mobiles in soft handoff are forwarded to the switch in the same manner they are for mobiles not in handoff. The RLP running at the switch is responsible for removal of duplicate frames received from serving base stations as well as issuing retransmission requests to the serving base stations. The RLP residing at the mobile performs a similar function.

Control channel information (i.e. status and power control) is derived independently at each base station and is transmitted to the mobiles in the same way as is done for mobiles not in handoff. That is, no coordination is required on the part of the base station for transmission of control information to mobiles in soft handoff. The mobile must be capable of demodulating up to three control subchannels independently as is currently done for power control bits. The rules governing interpretation of the power control bits remain the same, i.e., the mobile decreases it's transmit power if any cell requests this. The decision as to whether the channel is available is made on a similar basis. That is, the channel is assumed to be busy if any cell indicates a busy status. Further, acquisition is assumed if any cell indicates this by setting the appropriate status bits busy. The power control bits should indicate power up in the channel idle status to prevent disabling of acquired mobiles in handoff with adjacent cells.

If the forward packet data channels are transmitted synchronously, mobiles perform demodulation and diversity combining for soft handoff per IS-95. If the forward link packet data channels cannot be made synchronous, mobiles are required to demodulate only one of the forward packet data channels at any given interval. The selected is performed based on pilot strength. Switching between forward packet data channels is limited to the minimum slot interval in the system, and may be disabled during reception of a message. Note that the interleaving and mobile receiver processing delay increase the possibility of switching during message reception. In order to accommodate the switched diversity operation in the mobile, it may be desirable to reserve staggered slot intervals on the forward packet data channels used by the serving base stations. In this way, mobiles may alternate between channels without necessarily incurring data losses.

What has been shown and decided herein are methodologies for improving CDMA packet data service. The scheme employs closed loop power control for reverse link traffic and does not involve traffic channel set-up. In addition, the scheme supports multiple data rates and allows for a multitude of channel structures to be defined, depending upon the network traffic requirements. Further, in order to maximize the channel throughput, the scheme takes advantage of load fluctuations within the network, thereby allowing higher data rates to be accommodated in an adaptive manner. Finally, the concepts of soft handoff are extended to provide the packet data users with additional macro diversity which serves to increase network efficiency.

What is claimed is:

1. A method of communicating forward packet data and forward packet data control information over a forward link in a packet-switched CDMA network, comprising the steps of:

carrying the packet data on the in-phase component of a quadrature-carrier signal; and

carrying the packet data control information on the quadrature component of said quadrature-carrier signal.

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